

CLAIMS

1. An improved intravenous catheter system including
 - a) a multi-use entry-port element having first and second ends having a bore formed there-between, said port element configured for transcutaneous positioning such that said second end is brought into liquid flow communication with a vein of a subject; and
 - b) a catheter having first and second ends and a flexible catheter-tube there-between, said catheter tube having a predetermined length and a diameter adapted for slidable insertion through said entry-port element into the vein of the subject.
2. An improved intravenous catheter system according to claim 1 wherein said multi-use entry-port element includes
 - a) a hub having a slide adapter-connector fixably disposed at said first end of said entry-port element, thereby to provide sealed slidable access of said catheter-tube into said entry-port element and thereafter into the vein of the subject;
 - b) a cannula having an aperture formed at a second end thereof, said cannula fixably attached to said hub and disposed at said second end of said entry-port element, said cannula adapted for insertion into the vein of the subject; and
 - c) a removable needle having first and second ends having a needle-hub attached at said first end, having a sharp extremity at said second end and having a length sufficient to extend through said entry-port element, said needle slidably housed in said entry-port, said sharp extremity projecting beyond said aperture at said second end of said cannula thereby to pierce through the skin and vein wall into the vein

of the subject, and thereby to provide entry into the vein for said cannula.

3. An improved intravenous catheter system according to claim 2 wherein said entry-port element includes mounting lugs fixably disposed thereto, thereby to secure said entry-port element to the subject.
4. An improved intravenous catheter system according to claim 2 wherein said second end of said cannula is formed with a taper, thereby to provide a compression lip seal between said cannula aperture and said catheter tube.
5. An improved intravenous catheter system according to claim 2 wherein said slide adapter-connector includes a Luer Lock.
6. An improved intravenous catheter system according to claim 1 wherein said catheter includes
 - a) a connector element disposed at said first end of said catheter and having a removable cap, said connector element configured to facilitate, in the absence of said cap, connection of an intravenous therapeutic device to said first end of said catheter;
 - b) a slidable-connector element disposed at said second end of said catheter and having a removable cap, said slidable-connector element, configured to facilitate connection of said second end of said catheter to said first end of said entry-port element, thereby to facilitate sliding said catheter tube therethrough into said entry-port element and thereafter into the vein of the subject.
7. An improved intravenous catheter system according to claim 6 wherein said connector element includes a Luer Lock.
8. An improved intravenous catheter system according to claim 1, and also including an integral sterile environment containment element for enclosing said catheter tube within a sterile environment.

9. An improved intravenous catheter system according to claim 8 wherein said integral sterile environment containment element is selected from the group which consists of:
 - a) a longitudinal collapsible sheath configured to contain said catheter tube longitudinally therewithin; and
 - b) a cylindrical casing configured to contain said catheter tube as a withdrawable coil therewithin.
10. An improved intravenous catheter system according to claim 9 wherein said cylindrical casing includes a clutch device thereby to control forceful insertion of said catheter tube through said entry port into a vein, so as to avoid damaging the vein wall.
11. An improved intravenous catheter system according to claim 1, and also including a removable stiffener element slidably disposed within said flexible catheter tube, thereby to increase the stiffness of said catheter tube, and thereby to aid insertion thereof through said entry-port element into the vein of the subject.
12. An improved intravenous catheter system according to claim 1 wherein said entry-port element includes a selectably operable locking device for locking said catheter tube in a selected position with respect to a selected drug delivery location within the vein of the subject.
13. An improved intravenous catheter system according to claim 1 wherein said entry-port element includes a valve for regulating a flow of liquid through said catheter tube.
14. For use with an intravenous cannula element having first and second ends and having a bore formed therebetween, said cannula element configured for transcutaneous positioning such that said first end is adapted to protrude from a limb of a subject and said second end is brought into communication with an interior of a body organ of a subject,

a self-contained sterile catheter apparatus which includes

- a) first and second ends and a flexible catheter tube therebetween, said catheter tube having a predetermined length and a diameter adapted for slidable insertion through said bore of said intravenous cannula element into the body organ of the subject, and
 - b) an integral sterile environment containment element thereby to allow insertion of said catheter tube through said cannula element into the body organ of a subject in a generally non-sterile environment.
15. For use with an intravenous cannula element according to claim 14 wherein said catheter includes
- a) a connector element disposed at said first end of said catheter and having a removable cap, said connector element configured to facilitate, in the absence of said cap, connection of an intravenous therapeutic device to said first end of said catheter;
 - b) a slidable-connector element disposed at said second end of said catheter and having a removable cap, said slidable-connector element, configured to facilitate connection of said second end of said catheter to said first end of said entry-port element, thereby to facilitate sliding said catheter tube therethrough into said entry-port element and thereafter into the vein of the subject.
16. For use with an intravenous cannula element according to claim 14 wherein said integral sterile environment containment element is selected from the group which consists of:
- a) a longitudinal collapsible sheath configured to contain said catheter tube longitudinally therewithin; and
 - b) a cylindrical casing configured to contain said catheter tube as a withdrawable coil therewithin.

17. For use with an intravenous cannula element according to claim 14 and also including a removable stiffener element slidably disposed within said flexible catheter tube, thereby to increase the stiffness of said catheter tube, and thereby to aid insertion thereof through said entry-port element into the vein of the subject.
18. A method for introducing an improved intravenous catheter system into a subcutaneous vein of a subject, said method including the steps of:
 - a) introducing a multi-use entry-port, having a removable piercing-needle slidably housed therein, into an outer wall of a subcutaneous vein of a subject;
 - b) withdrawing the removable piercing-needle from the entry-port;
 - c) advancing the multi-use entry-port into the vein;
 - d) connecting a catheter device, having a flexible catheter tube, to the entry-port; and
 - e) slidably inserting the flexible catheter-tube through the entry-port into the subcutaneous vein of the subject.
19. The method according to claim 18 wherein said step of introducing includes the step of securing the entry-port element to the skin of the subject.
20. The method according to claim 18 wherein withdrawing the removable piercing-needle from the entry-port includes the step of partially withdrawing the removable piercing-needle from the entry-port, to guard the piercing needle and to avoid transfixing the vein.
21. A method according to claim 18, wherein, using a catheter tube having a removable stiffener element slidably disposed therein, includes an additional step of slidably removing the stiffener element from the catheter.